STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF CONSERVATION
DIVISION OF FORESTRY

the State Forester's 1963 REPORT

EDMUND G. BROWN
Governor

HUGO FISHER
Administrator
The California Resources Agency

DE WITT NELSON
Director
Department of Conservation

ANNUAL REPORT

of the

CALIFORNIA DIVISION OF FORESTRY

for 1963

F. H. RAYMOND
State Forester

The State Board of Forestry

Whitford B. Carter, Chairman
Lancaster

Paul Aurignac
San Ardo

Leslie O. Cody
Red Bluff

Peter J. Cormack
Redlands

E. P. Ivory
Dinuba

Kelly B. McGuire
Ft. Bragg

Frank C. Myers
Fallbrook

COVER PICTURE
aerial view of
OAK GLEN CAMP, Riverside and San Bernardino counties

The site of the first Youth Conservation and Training Camp under authority of Chapter 2051, Stats. 1963; located 10 miles northeast of Beaumont at 5500 feet elevation.

The State Forester's 1963 Report

PRINCIPAL ACTIVITIES OF THE DIVISION

The duties and responsibilities of the Division of Forestry are clearly authorized by statute and directed by executive authority and the Board of Forestry. The prevention of fire and the abatement of uncontrolled forest fires upon designated State and privately owned lands is a major activity. Sometimes this duty leads into avenues of a peripheral nature which have developed as social and economic conditions have made their recognition necessary. Associated activities bearing a relationship to wildfire include such work as advice and supervision in the use of fire in range improvement, the issuance of special rubbish dump permits and the revegetation of denuded areas.

The protection of non-forest land by the Division acting as a contractor has been the result of longtime circumstance and popular approval rather than specific design on the part of State officials. At any rate, this phase of fire protection has developed into big business which is briefly described under the title Rural and Structural Fire Protection.

The development of Conservation Camps where convicted men and youthful wards can engage in rehabilitating outdoor work was a rather natural outgrowth of current need and past experiences. The non-competitive workload which enhances the protection and conservation of natural resources has long been recognized as an obvious place to occupy otherwise idle hands and thus accomplish some needed social or economic therapy.

In the early 1930's this agency established so-called Labor Camps where unemployed men could come voluntarily and work and live without questions or qualifications. The living conditions were admittedly rather crude due to the urgency of the times and the low ebb in the State Treasury. But by the spring of 1933 the Civilian Conservation Corps, supported by strong hands in Washington, was introduced with enthusiasm among the forest and military officials who bore the primary responsibility for its conduct. The present California Youth Conservation and Training Program is essentially an echo of that civilian program of thirty years ago, and once again it will no doubt serve as a pattern for the entire Nation.

In respect to management of resources and regulation of their uses, the Division has several duties. There are the State Forests wherein the Division is to study and demonstrate methods of good silvicultural and managerial practices. Acting as advisors the Service Foresters are to consult and work with owners of small woodland plots in order to enhance landowner interest in good forestry for their own sake and for the welfare of the nation. The production of forest nursery stock for public planting and private forest type planting is an important program. Abatement of insect, animal and disease depredations is a subject of this agency's direct interest. Regulation of harvesting practices within the framework of the Forest Practice Act is also a primary responsibility. Such a breadth of authorities and duties is bound to invite Division participation in allied projects, especially of an emergency nature such as natural disasters. The work of the Division of Forestry continues to develop and expand.

THE STATE BOARD OF FORESTRY

During 1963 the Board of Forestry met in nine regular sessions, three of which were away from Sacramento. Much of their time was occupied in hearing and making determinations in respect to Alternate Rules for harvesting under the requirements of the State's Forest Practice Act.

The Board was also keenly interested in the enactment of the enabling law to establish a program of Youth Trainee Camps; the proposed Pacific Southwest Water Plan; and damage to commercial forest areas by animal and insect pests. Since elk damage to timber on the north coast was the subject of a public hearing by the Fish and Game Commission, the Board of Forestry formally requested the Commission to take steps to minimize such timber crop damage.

Member Ivory was appointed to serve on the constitutional Timber Maturity Board in respect to taxation of mature timber in the County of Fresno. Member McGuire was appointed to represent the Board of Forestry in a similar capacity in San Mateo County.

At Fort Bragg in August the Board, among other subjects of public discussion, heard seven presentations from eminent authorities on the subject "A Program of Outdoor Recreation for State Forests of California" (see Publications at the end of this Report).

A major interest of the Board during 1963 was the furthering of study and extension of the State's Forest Fire Control Plan. The State Forester was directed to proceed with a detailed review and study of existing and proposed forces and facilities so that he could present a comprehensive plan to the Board of Forestry by September of 1964.

IT HAPPENED THAT-

during 1963 the following events occurred.

State Forester Raymond, in his capacity as President of the National Association of State Foresters, presided at the regular annual meeting held in Anchorage, Alaska on July 21-24. The party of State Foresters were entertained and educated by a tour, mostly by air from Ketchikan to Anchorage and to Fairbanks. In January of 1963 Mr. Raymond traveled to Washington, D.C. for the purpose of discussing and conducting Association business with other members of the Executive Committee.

Dr. Levi T. Burcham, Assistant Deputy State Forester and range and watershed management specialist on the staff of the State Forester, was asked by the Office of the Secretary of Defense (Advanced Research Projects Agency) to spend four months in the capacity of consulting ecologist. Three months of this assignment were spend in Thailand. Burcham left his desk at Sacramento on August 19, 1963, and returned on January 1, 1964. His assignment consisted for the most part in review and evaluation of an environmental research program dealing with soils, vegetation, climate, and related factors. This program is directed by a research center operated jointly by the Thai and U.S. Governments. Dr. Burcham is no stranger to the Orient, having served as Captain of Marines during most of the Pacific actions during the Second World War. He was also requested to take an assignment for a short period in 1962 in South Viet Nam similar to his recent tour in Thailand. Burcham joined the Division of Forestry at the conclusion of his military service.

C. R. Clar, Assistant Executive Officer of the Board of Forestry and author of the book California Government and Forestry, was honored quite unexpectedly on June 21st when the Board of Directors of the Forest History Society, Inc. elected him a Fellow of the Society. The citation read: "For outstanding contributions of research and writing in the field of western forest and forestry history ..."

Floyd L. Otter, Forest Technician assigned to manage Mountain Home State Forest, published privately in an admirable little hard cover book the result of several years of extra-curricular labor in historical research and writing. The Men of the Mammoth Forest tells the intimate history of a sector of the southern High Sierra surrounding his State Forest. Otter dwells upon the people and circumstances which had an impact upon this wild and rugged land and its giant trees, from the time of the Indians to the present day.

Charles Elmo Freear began his firefighting career with the Division in 1931 as an Assistant Ranger. In 1945 he was appointed Chief of the Kern County Forestry and Fire Department. Chief Freear died after several months of serious illness in early 1963. He was succeeded by his associate and also former Division employee, John Woollomes.

In Santa Barbara, Chief of the County Fire Department Varian Wadleigh retired after 15 years of honorable service, to be succeeded in office by Victor L. Mohr.

State Forest Ranger Joseph Scherman of Orange Ranger Unit was highly complimented at an "appreciation dinner" at Disneyland on June 15. The dinner was sponsored by the Orange County Fire Chiefs Association in recognition of more than 40 years of continuous devotion to fire and conservation problems in Southern California. Sherman began his career with the Division when Orange County became a member of the State protection system in 1930.

Raleigh A. Taylor, after some 23 years of work for California in the field of forest law enforcement and fire prevention, retired at the end of 1963.

Ranger LeRoy T. Neil also retired at about the same time when he had concluded 30 years of Division assignments which took him into practically every part of the State. Roy's actual career began much earlier; as a boy he had followed his fire warden father wherever the firetrails led in the hills of Napa County.

Deputy State Forester T. F. Arvola, in charge of the Resources Management Section of the State Forester's staff, acted as Chairman of the Northern California Section of the Society of American Foresters during much of the year due to the absence of the chairman. In February, 1964, Arvola was honored by being duly elected to that office.

LEGISLATION OF 1963

A casual examination of the record indicates that the Legislature of California was most active in enacting laws pertaining to forest conservation and fire protection in the sessions of 1905, 1919, 1931, 1945 and 1963.

Generally it may be said that some culmination of influences from outside the legislative body brought about a concentration of interest in the need for changes in law or for the creation of new laws. The two world wars, strange as it may seem, were strong indirect factors in producing forest laws in the sessions of 1919 and 1945. During 1963 the interest and inquiries of legislative committees generated the development of bills arising from what might be termed internal good judgment, with a minimum of heated pressures from strong minded groups of individuals on the outside.

The Senate Permanent Fact Finding Committee on Natural Resources* in its Second Progress Report made 27 pertinent recommendations on the subject of forest and watershed fires. This Report was prepared for the guidance of the 1963 Regular Session. A majority of the recommended changes or additions of law were adopted by the Legislature. Senate Bill No. 643 (Chap. 2038, Stat. 1963) represented the bulk of this legislation.

The Assembly Interim Committee on Natural Resources, Planning and Public Works** in the course of a couple of years heard public expressions of dissatisfaction with accomplishments of the Forest Practice Act and other weaknesses of law. Because that committee expired, its chairman recommended that the Department sponsor legislation drawn to obtain committee objectives. Senate Bill No. 565 (Chap. 2033, Stat. 1963) was enacted to embrace the important changes made in the Forest Practice Act.

In the development of Senate Bill No. 643, the committee was striking hard at the conditions which cause such devastating fire losses each year in the wildlands of California. An augmentation of fire-extinguishing crews and facilities was not deemed an adequate solution to the problem. Said the Report... "People cause the majority of fires - therefore it is incumbent upon people

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*Created in 1961; first Chairman Charles Brown, then Virgil O'Sullivan during 1963 Session. Ford B. Ford, Executive Secretary.
**Lloyd Lowrey, Chairman. S.B. No. 565 introduced by Stanley Arnold.

to implement the objective of fire prevention.•••It has been fairly well established that no State in the Union has the variety and critical nature of risks as are prevalent in California.•••It was noted that California's fire prevention laws are relatively toothless or nonexistent when compared to laws of other and older States."

As in the development and modification of all regulatory statutes there were sharp differences of opinion expressed, and inevitable compromises made in final drafts of the law. One paradoxical incident is found in the enactment of another law precisely opposite to this committee's recommendation. That recommendation sought to -- "Encourage local school districts to utilize fire prevention material to be supplied by the State."

For anyone to thoroughly understand the effect of Chapter 2038 one would, of course, need to be familiar with much old and basic law of this State. Nevertheless, an attempt will be made to describe the major new aspects of law which will affect the operations of the Division of Forestry. Most of the new law amends the Public Resources Code by adding new regulations regarding the use of fire and fire causing agents. However, four other codes of law are also modified.

The new legislation says that it is aimed at facilitating fire prevention. It maintains that unrestricted use of grass, grain, brush, and forest lands is a potential menace to life and property from fire and erosion. Such a legislative intent was certainly implied in numerous old laws involving the use of fire. But the ancient concept of our law leaned heavily upon civil court action to redress a wrong caused by a neighbor's negligence. The new law would aid the plaintif by being more explicit in pointing out evidence of wrongdoing. At the same time it enlarges upon the place of the State in enforcing the increased regulatory controls pertaining to the use of fire.

It is now declared that the burning of vegetation can be done for a public purpose if the State Forester determines that such is necessary for fire prevention or suppression. This item strengthens powers already vested in that office. It is quite different from another chapter of the act which is titled Burning Contracts. This latter authorizes the State Forester to contract with landowners to burn vegetation located on lands of State Responsibility for the stipulated purpose of preventing or suppressing forest fires. Such a contract would leave all fire management to the State Forester, and have the actual work performed by State personnel. It places upon the property owner the burden of protecting the State and its employees from liability. Payment of costs must be made by the other contracting party. This particular chapter of the statute is a realistic culmination of arguments put forth by certain groups of

citizens who would be very pleased if some agency of government would apply itself to the risky job of burning wild vegetation deemed undesirable for any number of reasons by the particular group. It would seem doubtful that this provision of law will often be exercised. But it does transfer one aspect of a long running emotional debate from the lobbying stage into the precise and realistic conditions of written law.

New Chapter 2038 authorizes local governments to adopt fire ordinances or regulations more restrictive than State law. (In other words, the Legislature indicates in this case that it has not preempted all legislative privileges).

A rubbish dump is defined, and all persons maintaining such a dump outside incorporated cities are required to obtain from the State Forester a special permit. The permit may include specific terms and conditions of use for the purpose of preventing uncontrolled fire. This is in addition to the mandatory clearance requirement around the dump area which is written into the new law.

Declaration of a "hazardous fire area" whereon smoking, camp fires and bon fires are restricted to designated places during stipulated periods remains, as formerly, a privilege of the Board of Forestry upon receipt of a petition from owners of more than half of the intended area. The law of 1963 adds similar authority to the State Forester by allowing him to declare and designate hazardous fire areas and the period of effect of the regulation. This he may do when and where he determines that a fire hazard exists because of the presence of flammable material.

For owners of buildings in mountainous or forest, brush or grass covered areas, a regulation requiring the clearance of flammable vegetation a distance of 30 feet or more was written into law. Removal of limbs from above roofs and similar precautionary measures to prevent fires in rural cabins and homes is a strong new regulatory attempt upon the part of the State to reduce the number of fires and the consequent damage. Increase of population into the rural and wildland areas has naturally increased the change of fire incidence and the exposure of flammable wealth in the shape of homes and improvements.

A somewhat similar aspect of the new law requires persons owning or maintaining electric power lines (carrying more than 750 volts) upon mountainous or forest, brush or grass covered land - as determined necessary by the State Forester - to clear vegetation from under the lines to varying widths depending upon the voltage carried. Trees or portions of trees which could cause fire because of any falling wires must also be removed.

The law requiring every person to obtain a permit to burn or blast either upon his own land or that of another has a long legislative and court history. In the recent session there was a new approach to the situation by the creation of two zones generally dividing the State - north and south - through the latitude of Mt. Diablo. In the southern portion, burning permits are required throughout the entire year. In the north the required period is between April 1 and December 1, with the provision that the Director of Conservation may, by proclamation, extend the period of time in the north.

The law now extends further aid to enforcement officers by declaring the violation of the terms of a permit is prima facie evidence of non-compliance which thereby voids the permit. It is also stipulated that the escape of a camp fire or fire caused by the operation of an engine, railroad, barbeque, chimney, etc. shall be prima facie evidence of negligence on the part of the responsible person.

A spark arrester is at last clearly defined by specifying the size limit of carbon or flammable particles which must be retained by the devices on internal combustion engines, incinerators, and so forth.

Another aspect of the new law from out of the distant past authorizes the State Forester to reward by $100 any person giving information leading to the arrest and conviction of anyone willfully or maliciously setting fire on State Responsibility Land.

History was repeated when the Legislature made provision for the declaration and elimination of a public nuisance existing as an unusual fire hazard upon State Responsibility Land. The fundamental act of 1905 included a similar provision which was sometimes referred to as the Menace Law. It was repealed in 1931 in a general overhauling of the basic forestry statutes. The old law was often the cause of bitter arguments. But these were generally academic because the only practical application of the law seems to have been several thoroughly congenial cooperative clean-up projects wherein lumber companies generally paid the wage of State rangers to perform work during the winter season. But the last several decades has brought a great change in the face of California's landscape. The menace of a public nuisance in the wildlands is fraught with vastly more danger to the increased population and the increased values upon the land.

The State Board of Forestry shall establish for each Division District standards of the type of conditions not otherwise provided by law which create an unreasonable fire hazard to life or property.

When the State Forester determines that a public nuisance of this nature exists he shall inform the owner of the property. The owner may request a public hearing before the State Forester in accordance with prescribed procedures. The hearing is for the purpose of determining if a public nuisance does exist in fact. Or the owner may abate the nuisance as demanded by the State Forester in his written notice that the nuisance exists. If the owner fails to respond within a given time the State Forester shall abate the nuisance and the cost thereof shall be recorded as a lien upon the property.

Another new aspect of law provides for the creation within the Department of Conservation of an Advisory Committee on the Treatment of Rights-of-way. Members are to be appointed by the Governor from appropriate industries, fire services, and street and road construction people. The members are not compensated but are to be reimbursed for necessary expenses. They shall act as a clearinghouse for information regarding materials and methods which may be used on highway and railroad rights-of-way for fire prevention purposes. With available funds they may test and recommend any such materials or methods, and they may enter contracts to accomplish this work.

The law prohibiting the ejection of fire causing substances from any vehicle was tightened up to eliminate some small but actual loopholes. It was also stipulated that the Department of Public Works and county road commissioners shall place signs outside residential and business districts which shall warn motorists of the penalty for discharging litter or fire causing substances from vehicles. In the same vein, a new section of the Vehicle Code requires the highway officials to transmit to the Division of Forestry any letters received from the public which identify and allege that occupants of vehicles have been seen to discharge fire causing materials unlawfully.

Another repetition of history involves an amendment of the Penal Code regarding the cutting and transportation of Christmas trees. Thirty years ago, State Rangers were often employed during a few weeks prior to Christmas in checking truck loads of trees and greens and demanding that the transporter present evidence that the material had come into his possession legally. Greenery and trees were commonly cut and stolen by unscrupulous dealers, especially for the big city markets. As a matter of fact, most of the general public had not yet been educated to the fact that young trees, shrubs and ferns growing on wildland could have both intrinsic and potential value to some tax paying landowner.

The first statutory recognition of the situation, other than general trespass laws, was enacted in the legislative session of 1921 in a law which mentioned only Toyon berries. Thereafter the muddled word structure of this particular law as amended through various sessions could serve as an excellent example of how to obfuscate the obvious with verbosity. At any rate, the State Forester's direct responsibility for enforcement of the law was eliminated in one of numerous amendments. Some responsibility was amended back in 1963.

The new law is even more complex than the old one which was admittedly difficult to enforce with much success. Currently any person cutting or removing trees or shrubs for commercial purposes from land not his own must obtain a notarized permit from the owner and a bill of sale. A record of the permit must be filed with the local sheriff prior to the cutting. A person transporting such material on public roads must purchase a transportation permit.

To do this he makes application on a special form, to the sheriff of the county in which the greenery was cut, for a tag for each truck load. The particular tags must be validated by a peace officer of the same or an adjacent county. Division of Forestry officers may validate such tags. Also it is to be remembered that the particular harvesting may require a timber operators permit. Loads not meeting the requirements of law may be confiscated.

The Forest Practice Act, originally enacted in 1945, was subject to intense legislative scrutiny and was vigorously amended in 1963 in order to obtain greater compliance with law and rules. Enforcement of the act had been lacking in effectiveness in several respects. Administrative processes were slow and cumbersome; obvious damages to soil and forest could not be corrected or even stopped in cases where the violator was unsympathetic with the spirit of the law. The permit requirements of the act lacked power to demand complete compliance.

In the recent legislative session, Senate Bill 565 was created after numerous discussions among interested parties. A half dozen amendments finally brought a vote of approval from both houses and then the Governor's signature. New Chapter 2033 of 1963 accomplished the following changes in the Forest Practice Act.

An original operator's permit now costs 15 dollars. An annual renewal costs 10 dollars, with a late payment penalty fee of five dollars if it is not acquired in the month of January. Conditions of granting or denying a permit by the State Forester are more precise and binding upon the applicant. Failure of the owner of

the timber to notify the State Forester prior to the operation is a misdemeanor violation. Further, the operator must also give notice prior to commencement of work or suffer suspension or revocation of permit. The State may take direct action to correct rule violations under certain conditions (and at a maximum 40 dollar per acre assessment of cost against the operator or owner, or both). The technical and procedural aspects of suspension and revocation of permits, restraining orders, and injunctions was considerably modified to accomplish the basic intent of the law.

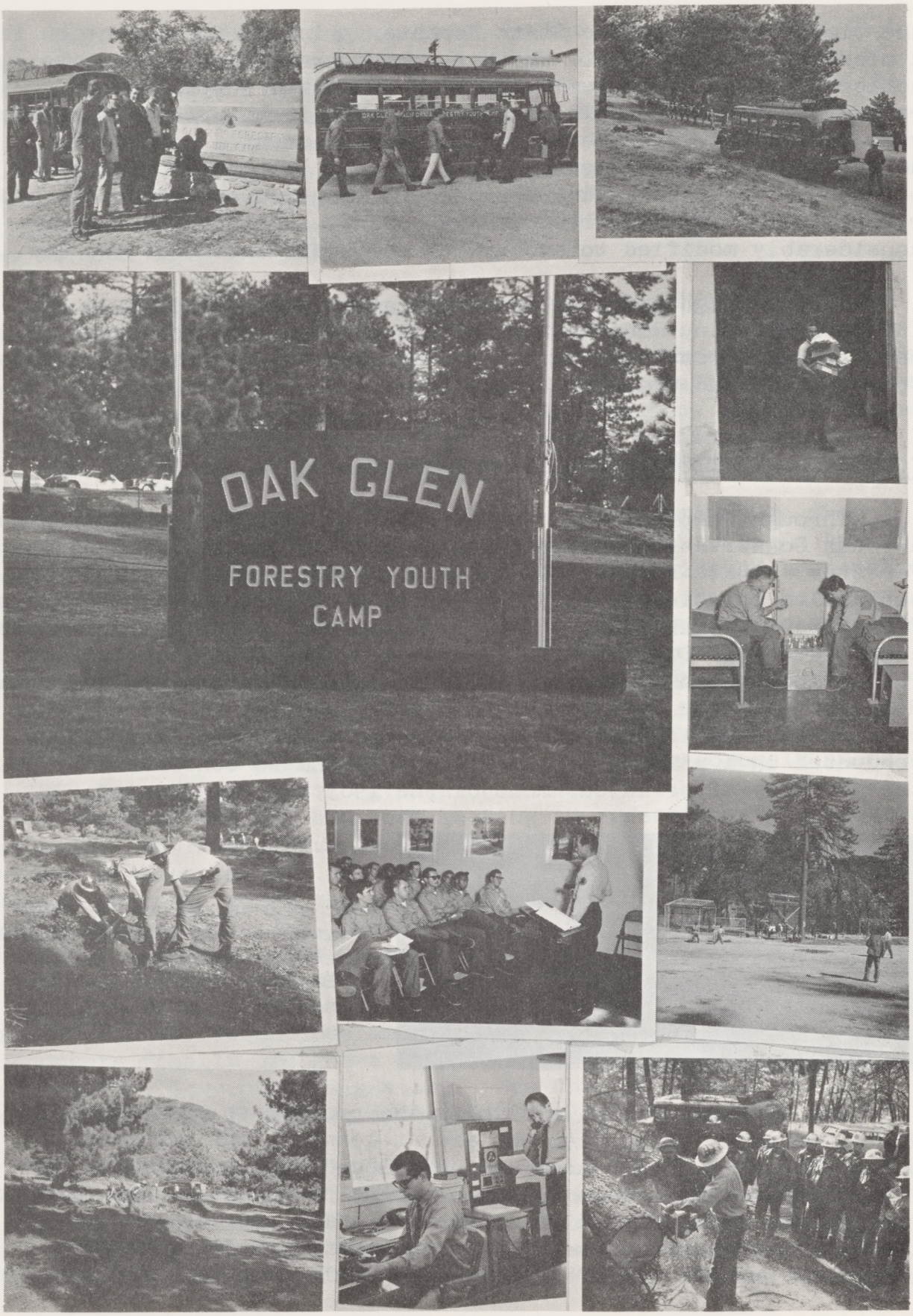
Another high point in the legislative story of 1963 is not involved with any modification of authorities and procedures of established forest or fire laws. This was the creation of a Youth Conservation and Training Program.

YOUTH CONSERVATION AND TRAINING PROGRAM

Through Chapter 2051, Statutes of 1963, there was established a Youth Conservation and Training program in the Division of Forestry. State Forester is responsible for its administration, subject to policies developed by a Board of Directors. A Board of Directors is established in the Department of Conservation and is composed of the Director of Conservation, the Superintendent of Public Instruction, Director of Employment, Director of Industrial Relations and the Director of the Youth Authority. The Director of Conservation is chairman of the Board. The program is to be conducted on a pilot basis and is authorized to continue only until the 91st day after adjournment of the 1965 General Session.

BOARD OF DIRECTORS OF THE YOUTH CONSERVATION AND TRAINING PROGRAM IN SESSION. AMONG THE AUDIENCE ARE BOARD OF FORESTRY MEMBERS.

The Budget Act of 1963 limits the program to one camp for 100 Youth Trainees. Young men who are at least 16 but not over 21 years of age, out of school and unemployed, are selected by the Department of Employment for appointment by the State Forester to the program for a period of six months. The program, in general terms, provides a camp-work-learning experience for selected young men who are out of school and unemployed. Youth Trainees are


OAK GLEN
FORESTRY YOUTH
CAMP

paid at the rate of $60 per month while serving in the program. Of this amount, $40 is held in trust and paid to the Youth Trainee after his separation from the program.

Up to 20 percent of the number of Youth Trainees at camp may be assigned as "leaders" and receive an additional $10 per month. The program provides transportation, food, clothing, lodging, and emergency dental care, supervision instruction, compensation, schooling, and a work program of a useful public purpose. Young men are afforded the opportunity to participate in work and activities which will develop traits and attitudes deemed necessary to the character of any productive member of society.

As a first step in the program, Oak Glen, a 60-man Conservation Camp near Beaumont in Riverside County was deactivated. The site was then designated as the Oak Glen Forestry Youth Camp. Facilities were expanded to provide the needs of a new program. Oak Glen Camp opened on November 1st with the arrival of 24 Youth Trainees. Additional appointments were made periodically to reach the 100-man complement over a three-month period.

The employees composing the staff at Oak Glen Forestry Youth Camp are: one Program Supervisor, one Work Program Manager, one Operation and Camp Manager, 14 Forestry Work Project Foremen, one Intermediate Stenographer, one Storekeeper, 2 Cooks, one Automotive Maintenance Foreman and one Forestry Equipment Operator. Instructors to provide schooling in the basic learning skills are provided by the local County Superintendent of Schools at the request of the State Forester.

The Department of Employment has assigned one Employment Counselor to assist the Youth Trainees in establishing a suitable goal. His counsel is also used in determining camp and work assignments that may further assist the Youth Trainees in gaining experience in activities involved in the Program.

The work projects on which Youth Trainees are assigned is, basically, the work program developed for the former Oak Glen Conservation Camp. It includes the construction and maintenance of firebreaks and fuel-breaks, and truck trails, the control of forest fires and control of forest insects and diseases. For all practical purposes the work projects are to be confined to natural resource conservation projects serving useful public purposes which will not result in displacement of regular civilian workers.

THE FIRE SEASON OF 1963

In California the statistical fire season is reckoned by calendar years for purposes of comparison. However, it often happens that the manning of summer lookouts and fire crew stations must be continued into the early months of a new year. In spite of the generally favorable fire weather of 1962 such a condition prevailed in the lower San Joaquin Valley and in Southern California at the beginning of 1963 because of an unusually dry December.

In total, however, 1963 enjoyed a very light fire season. The number of fires and area burned were lower than those of the previous season, and lower than the average of the previous five years. The U.S. Forest Service reported 1343 forest fires as against an average of 2321. Their lost acreage in the California Region was less than 10,000 which was less than 10 percent of the average of recent years.

Upon the forest and watershed lands protected by the State Division of Forestry, the seasonal record shows 2545 forest and watershed fires. This was the lowest number since 1957, and 330 fewer than during 1962. Lightning caused only 173 of their fires, which was 80 percent of the (moving) annual average.

It is an interesting (and probably most fortunate) fact that there is considerable variation in fire conditions among the several geographic regions of California. Any year's total of fires and losses for the entire State can vary tremendously from another seasonal total, as has been shown above. Yet statistics for any of the several recognizable climatic zones within the State may deviate from the statewide trend rather remarkably. Some districts may be having a relatively easy time while others are in a state of high emergency. The fortunate aspect of such a truism is to be found in the fact that a statewide organization, such as the Division, has strength in depth which permits shifting of forces in time and place to meet the crises. A smaller fire protection organization in respect to forces and geography is obviously subject to the statistical risk of an overwhelming major crisis. However, in recent years, and especially since the Second World War, mutual aid understandings among fire service agencies has made it possible for almost any governmental unit to move rapidly to render assistance to another upon a request for aid. Old legal and fiscal hurdles have given way to good planning to meet any period of civil emergency or disaster.

Weather during the early weeks of 1963 led wildfire and water specialists to fear a repetition of the drought and consequent holocausts of recent years. But April brought heavy rains to Northern California and moderate rains to the south. Relatively cool weather prevailed until mid-August, and humidity was higher than usual.

September brought varied weather conditions throughout the State. It even brought heavy rain showers to the south when tropical storm Katherine passed by. With Katherine's moist kiss and departure, very high temperatures broiled the southern half of the State in new records for the lateness of season. Yet fire hazard was not extreme during the month as a whole. October brought the heavy rains of true early California fall weather. A brief and unspectactular forest fire season had ended.

Compared with reliable fire records gathered over 35 years by the Division, 1963 produced the lowest annual burned area upon the forest and watershed lands protected by the State. The 32,250 acres was approached only by the record of 1937 when 5000 acres more went into the record book. There is no question but that favorable weather retarded the start and spread of fires that could have run wild over land and property similar to the holocausts of 1958-60. Nevertheless, the fires that start practically any place during any summer in California require prompt suppression action. The force of men and facilities to do that job in 1963 never lost their respect for the unknown potential of every wildfire.

A GREAT FIRE WHIRL BEGINNING ITS SWEEP OUT TO SEA ON THE COAST OF SOUTHERN CALIFORNIA. THIS WAS CAUSED BY EXTREMELY UNSTABLE AIR OVER BROKEN TOPOGRAPHY, INFLUENCED BY MODERATE WIND AND THE CATALYST OF A RUNNING WILDFIRE. THE DESTRUCTIVE WHIRL PULLED UP BUSHES, ORCHARD AND SHADE TREES, BARNS AND HOUSES, THROWING FIREBRANDS AS IT TRAVELED.

Polo Fire, photo by Jouraloff, Santa Barbara News-Press

GENERAL FIRE STATISTICS - Calendar Year 1963

Without a precise definition of causes and types of fires (as well as the basic definition of a reportable "fire") it would be quite impossible to adequately catalogue and compare the history of fire conditions from place to place and time to time. Such a designation and description is precisely set down for California and the forested lands of the Nation. In California, the segregated land areas recognized in a comprehensive statistical fire summary are these:

(1) land owned by the Federal Government;
(2) State and privately owned land in two categories, represented by Block A, below: (a) primary timber-watershed (Zone I) and (b) secondary watershed or rough range land (Zone II);
(3) unincorporated rural land of all ownerships which supports no formally classified value of timber or watershed (Zone III)
(4) incorporated city land, not represented in "forest" or "rural" fire statistics.

Block A. Timber and watershed Fires on State and Private Lands - (Zones I and II)
(Does not include structural or vehicle fires, or fires on Federal Lands)

PROTECTING AGENCY	ACRES PROTECTED	NO. OF FIRES	ACRES BURNED TIMBER	ACRES BURNED WATERSHED
Cal. Div. of Forestry	29,846,770	2,545	1,054	31,196
U.S. Forest Service	5,253,934	392	264	550
Nal. Park Service	28,290	0,000	000	0
Hoopa Indian Reservation	2,326	5	0	0
Kern County	2,177,255	112	0	1,823
Los Angeles County	626,812	102	0	774
Marin County	276,490	69	0	298
Santa Barbara County	742,500	104	0	240
Ventura County	385,190	98	0	1,837
TOTAL	39,339,567	3,427	1,318	36,718

Block B. National Forest land (only) in California. Number of fires: 1343; acres burned 9203.

Block C. Division of Forestry protection area only. Number of NON-FOREST fires in timber-watershed; 2018. Number of fires of all types attended by Division in RURAL area (Zone III) protected by Division under contract: 6425 fires which burned 8988 acres of flammable vegetation in addition to structural values.

Block D. CREW ACTIONS - by Calif. Div. of Forestry Crews

CREW RUNS	
6,516	to forest and watershed fires (Zone I and II only)
3,144	to structural and vehicle fires in forest-watershed areas
9,094	to C.D.F. protected rural area (Zone III)
237	to U.S.F.S. border area fires
587	to city fires by rural C.D.F. Crews
2,398	to false alarm, rescue, and service calls
151	other
22,127	TOTAL Runs and Actions

Block E. Total reportable fires attended during 1963 on land of all Zones protected directly by Division: 10,988

RURAL AND STRUCTURAL FIRE PROTECTION

Primarily because State Government, especially as evidenced in legislative action, refused for decades to accept a heavy share of the financial responsibility for forest and watershed fire protection, it was practically impossible to establish precise administrative responsibility. The problem was never simple, yet its importance required some practical working solutions.

Law as early as the Act of 1905 provided for supervision by the State Forester of fire prevention and control projects on forest and range lands, with the respective counties bearing most of the cost. Statutes of 1919 emphasized and specifically authorized cooperative contracts between the State Forester and various parties, especially the counties. This provision had been stimulated by incendiarism and serious rural fire losses during the war years. Also during this period it was practically necessary for California to take some material recognition of the new federal aid program designed to improve forest land fire protection.

The result, from an administrative standpoint, was a small but much needed improvement in fire protection, which progressed under no particular fiscal plan. Fire fighting facilities and the ranks of the dedicated men certainly increased. But the State organization, as such, became badly disjointed because local funds supported the bulk of the physical organization, and local appropriations naturally varied with local taxable (rather than flammable) wealth and with local enthusiasm for the project.

With a great increase in the State appropriation for fire protection after the Nation entered the Second World War, and with the adoption of a formalized plan by the Board of Forestry, a segregation of cost and effort became possible. The State delineated forest and watershed lands considered the primary protection problem of the State; yet the original plan of cooperative fire prevention under State supervision could be continued with any county. Now it was simply a matter of asking the respective counties to determine the degree of augmentation they wished to make to the basic State facilities and thereafter paying for the particular augmented units of personnel, vehicles, implements and so forth.

Augmentations may be made under specific contract to protect rural agricultural land and structures, or to maintain added winter fire protection, or even to augment the State's timber-watershed protection. Wherever a heavy investment is made in property, such as fire stations or pumper trucks, a county sometimes makes direct payment for purchase or maintenance costs. In the former category, that is, where the State makes the original expenditure on behalf of the

county, the total anticipated expenditures for fiscal year 1963-64 is reflected in 29 contracts involving more than $3,825,000. In addition to the rental of 40 State firetrucks during winter, plus station rental costs, the Division maintains the following personnel at a cost fully reimbursed by the several counties: one Ranger, 33 Associate and Assistant Rangers, 20 clerks, 93 Foremen, 226 yearlong and 121 seasonal Drivers, 33 yearlong and 36 seasonal Crewmen.

In the category of direct payments made by the county but supervised by the State Ranger, the sum will be nearly one and one-half million dollars.

It is interesting to compare this total 5.3 million dollars with the similar expenditure made by the combined counties 30 years ago. At that time the total sum represented in contracts with the State Forester was $123,307.

The picture above shows a pumper firetruck constructed for the County of Tulare through private contract. Work was planned, supervised and inspected by Division specialists. This piece of equipment meets all Board of Fire Underwriters requirements as a Class A pumper truck. It is built to specifications recommended by the Division for rural structural work. Its specifications are 25,000 pounds GVW; 175 inch wheel base; 332 cu. in. V8 engine; 500 gals. water tank; midship 750 gpm pump; aux. engine drive 85 gpm. pump. Some structural fire accessories are added.

CLASS OF FORESTRY FIREMEN CREATED

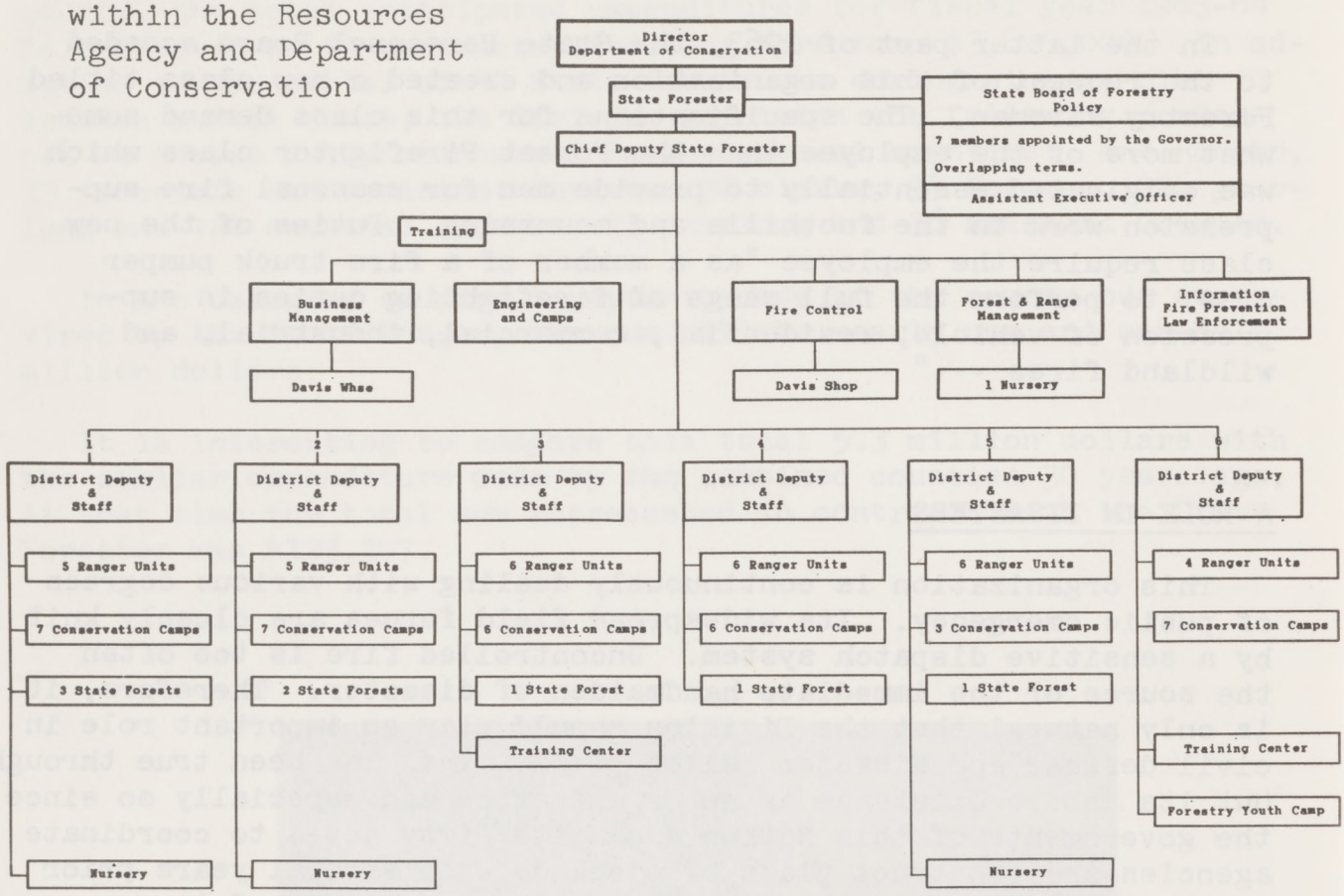
In the latter part of 1963, the State Personnel Board acceded to the request of this organization and created a new class titled Forestry Fireman. The specifications for this class demand somewhat more of the employee than the Forest Firefighter class which was originated essentially to provide men for seasonal fire suppression work in the foothills and mountains. Duties of the new class require the employee "as a member of a fire truck pumper crew, to perform the full range of firefighting duties in suppression of vehicle, residential, commercial, industrial, and wildland fires ..."

A ROLE IN DISASTERS

This organization is continuously dealing with various degrees of public emergency. Its widespread field forces are closely knit by a sensitive dispatch system. Uncontrolled fire is too often the source or the immediate handmaiden of disaster. Therefore, it is only natural that the Division should play an important role in civil defense and disaster relief plans. This has been true throughout its entire existence as an organization and especially so since the governments of this Nation and State first acted to coordinate agencies and construct plans of civil defense several years prior to the Attack on Pearl Harbor. Under the provisions of law, executive orders and formal plans, the Division maintains close cooperation with the California Disaster Office.

Division personnel and facilities are an important, integrated element of the State Fire Disaster Plan. Three District Deputy State Foresters and 22 State Rangers are currently in elective positions of region and area leadership. Central Dispatcher at Sacramento, five District Headquarters and 25 Ranger Unit dispatch offices are equipped with two-way radios on the Disaster Office channels. Three special Disaster Office Communication vans, two fire service communication trucks and eight fire pumpers are maintained by the Division under agreement with that agency. One hundred and forty radiation monitoring kits are assigned to Division of Forestry personnel at selected stations throughout the State. A system of monitoring radiation fallout and reporting to the Disaster Officer has been devised. Plans of coordinated rescue and disaster rehabilitation work are continuously maintained for all conceivable emergency needs wherever they may arise in the State of California.

THE DIVISION ORGANIZATION
within the Resources
Agency and Department
of Conservation



The organization chart above indicates three primary levels of administrative control. The Board of Forestry which is a policy forming commission is not in the executive line. The State Forester is Division Chief. He is assisted by a staff consisting of a Training Officer and five sections, each supervised by a Deputy State Forester. The Davis complex consists of warehouse, shop and forest nursery each under the general direction of the respective staff section supervisor.

Line authority passes from the Chief or Chief Deputy to the Deputy State Forester in charge of a regional field District. Each respective District Office exercises supervision over the third echelon of administrative units in that District. These would include Ranger Units, State Forests, Conservation Camps, Nurseries, and Training Centers. The official in charge of each such unit is assisted by employees in the various work classes.

A roster of employees during mid-summer of 1963 would contain names of 2432 persons in full time positions and also "seasonal"

employees varying from 1400 to 1700 in number. The cause of the latter variation would not at all be due to mismanagement. The budget would show an allowable average of 1676 positions in seasonal employment. However, in the Forest Firefighter class, peaks of hiring by field supervisors is standard procedure. Such hiring is adjusted to prevailing weather and fire hazard.

Among the full time employees the roster would include the State Forester, his Chief Deputy and Deputies to the total of 13. These leaders would be assisted by 13 Assistant Deputy State Foresters. Three classes of Ranger would total 63 men, and the Associate Ranger class 51. There would also be 183 Assistant State Forest Rangers. In the Forest Technician group there would be 8 of senior grade, 33 regular and 14 in the assistant class. Nineteen selected young men would be working as Trainees. In the area of law enforcement and fire prevention a total of ten men would be enrolled.* One meteorologist aids the fire control staff.

Among the fire crews scattered from Oregon to Mexico one would find 573 full time, plus 27 seasonal Firefighter Foremen; 168 Equipment Operators; 525 regular plus 91 seasonal Firetruck Drivers; and Cooks to a total of 188 of which 32 would be full time. Perhaps 50 Firefighters would be full time employees while the summer peak would find 1300 or more on the roster. Lookouts would require 116 seasonal observers.

In the Conservation Camps there would be 37 Camp Superintendents, with 42 Assistants and 293 Work Project Foremen. In the engineering-drafting classes would be 43 employees, and closely allied in the "trade" classes" there would be 45 carpenters, electricians and painters. Automotive mechanical work would employ 31 men from engineer grade through mechanics.

Fiscal and staff services would require 11 specialists, and at some 40 main offices and stations no less than 163 clerks of all grades would be employed. In total, then, one could have counted 4100 employees on any mid-summer day of the year 1963.

Less than 40 years ago the total regular summer employment in the young Division of Forestry would have been approximately 40 employees. That was, of course, a very different time, a different community and a different organization. Yet, it would be well to point out that then, as now, when forest fires run wild the enlistment of hundreds of additional hands is an essential aspect of personnel management in an organization constructed to operate efficiently in any degree of public disaster.

*PLUS 10 FULL TIME FROM THE RANGER GROUP ENUMERATED ABOVE.

TRAINING

During 1963, ten classes of Forest Fire Truck Drivers and three classes of Forest Firefighter Foremen, 20 men in each class, were graduated from the two Training Centers at Ramona and Sutter Hill. Each strenuous training session requires five weeks of concentrated classroom, laboratory and field work. One Foremanship class was attended by a guest student from the Montana State Division of Forestry. In past seasons Montana and Nevada have been represented.

In 1963 an Assistant Ranger and a Foreman were assigned to each Center as regular members of the faculty. This provides each Training Center with a permanent teaching staff consisting of one Ranger, one Associate Ranger, one Assistant Ranger and one Forest Firefighter Foreman. Three additional Foreman instructors are on a rotating assignment.

Throughout the organization there is continuous in-service training, formal and informal, where any of the special activities may be studied by the assigned employees. The automotive management sessions each spring at Coalinga are a pertinent example.

STATIONS AND PROPERTY

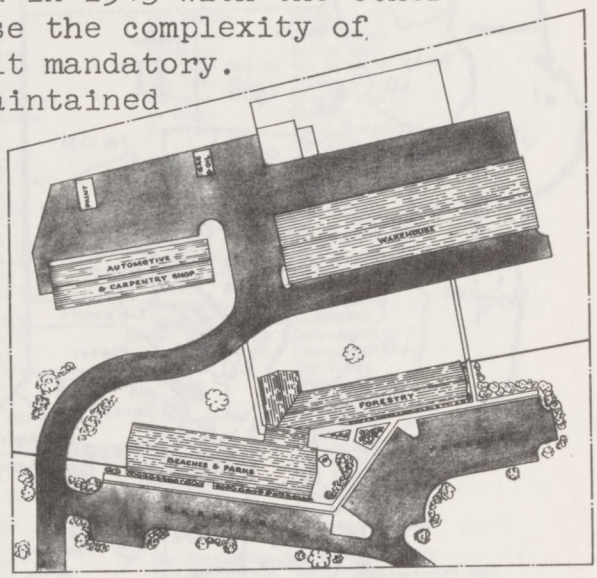
Types of locations occupied by the Division during 1963 to accomplish its primary statutory duties were as follows. Headquarters was in State Office Building No. 1 in Sacramento; there were six District Headquarters respectively situated at Santa Rosa, Redding, Sacramento (State College site), Fresno, Monterey and Riverside; there were 32 Ranger Unit Headquarters (see map page 24); 205 Forest Fire Stations (separate from crews at Ranger Hdqt. and rural stations); 86 Lookout Stations; 39 Conservation and one Youth Trainee Camp; two Training Centers; eight State Forests; four nursuries; a central warehouse shop at Davis. There were 14 primary air tanker bases and five helicopter bases where private aircraft under contract were for the most part stationed at civil airports.

Twenty-eight structural units of various types were constructed for the Division during 1963 in addition to numerous maintenance projects. The most important by far was the Monterey Headquarters described on the next page. An inventory of real property owned by the Division is difficult to catalogue because of the numerous combinations of uses for many single structures. Nevertheless, there seems to have been 1,906 buildings of many sizes generally listed as follows; offices 75; residences 217; garages 320; barracks 317; messhalls 101; lookouts 73; shops 38; storage 111; warehouses 95; tank and pump houses 147; recreation halls 18; gas-oil houses and shelters 196; power plants 31; radio repeater vaults 37; toilets 58; utility (laundry, etc.) 32; misc. (hangars, etc.) 40.

OWENS VALLEY AND MONTEREY

A new Ranger Unit was officially established for the Inyo-Mono area of District IV. It is called the Owens Valley Unit, with headquarters in Bishop.

Central Coast District V, was created in 1943 with the other five regional administrative units because the complexity of government, especially in wartime, made it mandatory. From May to July the headquarters were maintained in a few rooms available in the U. S. Blister Rust Office in Oakland. Then the District Deputy and his staff moved to the State Building in San Francisco until March 1947. The next move was to rented quarters at 480 Calle Principal, Monterey.

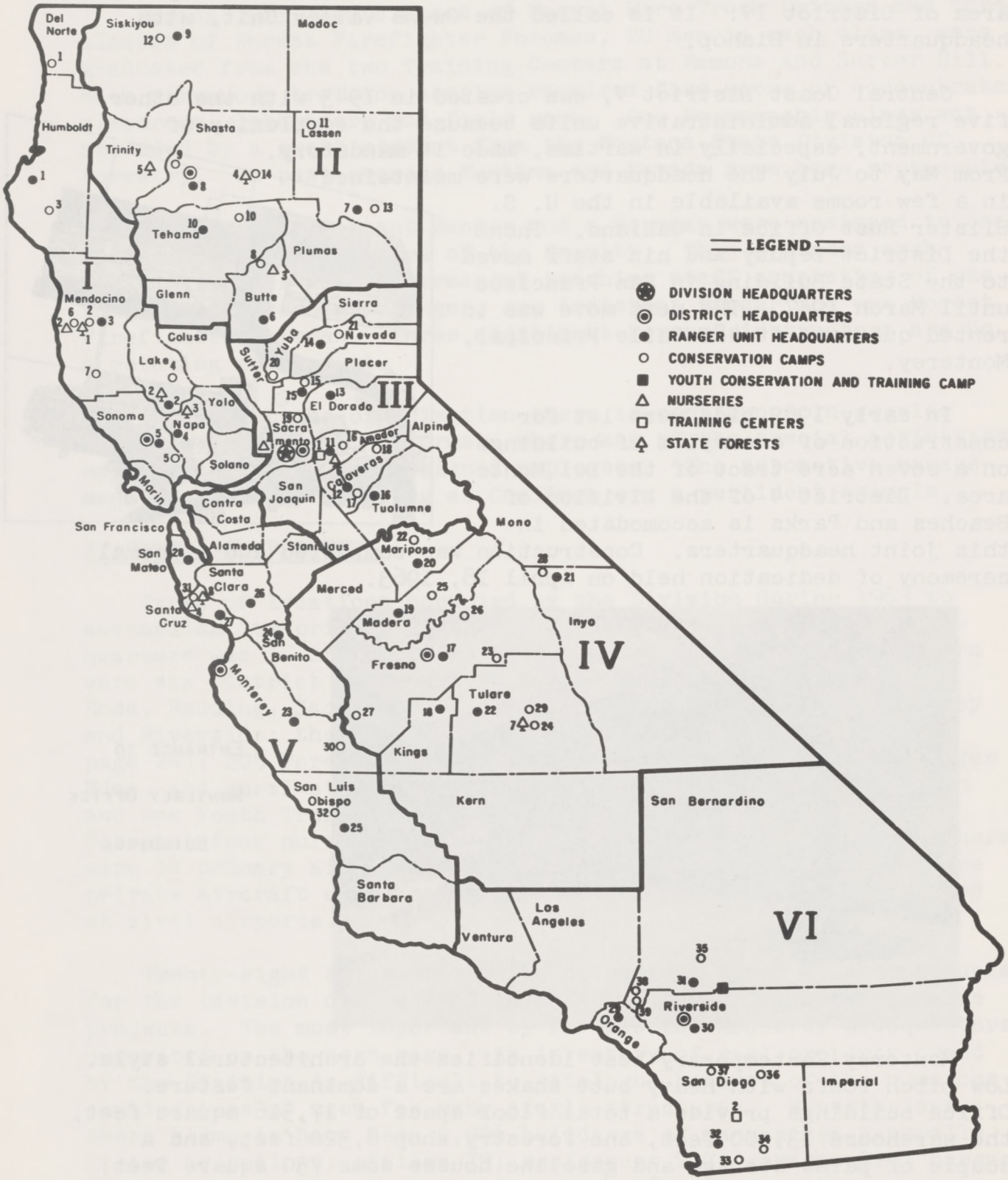


In early 1962 bids were let for construction of a complex of buildings on a seven acre tract of the Del Monte area. District 4 of the Division of Beaches and Parks is accomodated in this joint headquarters. Construction was completed and a formal ceremony of dedication held on April 18, 1963.

ENTRANCE TO MONTEREY OFFICE BUILDINGS

Monterey Contemporary best identifies the architectural style. Low pitch roofs with heavy butt shakes are a dominant feature. Office buildings provide a total floor space of 17,516 square feet, the warehouse 13,000 feet, the forestry shop 8,320 feet, and a couple of paint storage and gasoline houses some 730 square feet; a grand total of 39,566 square feet.

PRINCIPAL OFFICES AND INSTALLATIONS



DIVISION OF FORESTRY
PRINCIPAL OFFICES AND INSTALLATIONS
(Numbers are keyed to accompanying map)

DIVISION HEADQUARTERS: State Office Building No. 1, Sacramento, 14, California
F. H. Raymond, State Forester

District I Hdq. - Santa Rosa District III Hdq. - Sacramento District V Hdq. - Monterey
II - Redding IV - Fresno VI - Riverside

Ranger Units: County, Location, District (Located in first-named county) (Listing includes Forest Fire Stations - None of which have been located on the map. Lookouts, Air Attack Facilities, Bulldozer Crews are not listed nor located on map.)

1 Humboldt-Del Norte Fortuna I
Fortuna
Garberville
Weott
Alder Point
Bridgeville
Trinidad
Crescent City
Elk Camp
Fernwood
Thorn
Alder

2 Lake-Colusa Middletown I
Middletown
Clearlake Oaks
Kelsey-Cobb
Leesville
Wilbur Springs

3 Mendocino Willits I
Howard Forest
Boonville
Laytonville
Covelo
Leggett Valley
Woodlands
Hopland
Point Arena
Ukiah
Rockport
Fort Bragg

4 Napa-Yolo-Solano St.Helena I
St. Helena
Brooks
Gordon Valley
Los Posados
Spanish Flat
Napa

5 Sonoma Santa Rosa I
Santa Rosa
Milton
Cloverdale
Glen Ellen
Healdsburg
Mendocoma
Cazadero
Occidental
Petaluma

6 Butte Oroville II
Oroville
Cohasset
Forest Ranch
Burleton
Jarbo Gap
Sterling City
Harts Mill
Paradise
Transfer Point

7 Lassen-Modoc Susanville II
Susanville
Eagle Lake
Willow Creek
Bieber
Grasshopper
Termo

8 Shasta-Trinity Redding II
Redding
Whitmore
Buckhorn
Burney
Latour
Oge
Fawn Lodge
French Gulch
Hillcrest
Shingletown
Weaverville

9 Siskiyou Yreka II
Yreka
Fort Jones
McDoel
Hornbrook
Weed

10 Tehama-Glenn Red Bluff II
Red Bluff
Baker
Elk Creek
Lassen Lodge
Manton
Montgomery
Paskenta
Vina

11 Amador Sutter Creek III
Sutter Creek
Dew Drop
Mt. Zion
Pine Lodge

12 Calaveras San Andreas III
San Andreas
Altaville
Copperopolis
Esperanza
Murphys
West Point
Valley Springs
Bailey Ridge

13 El Dorado Arnold
Mt. Danaher
El Dorado
Skull Creek
Camino III

14 Nevada-Yuba Garden Valley
Nevada City
Columbia Hill
Higgins Corner
Shady Creek
Pilot Hill
Nevada City III
Dobbins
Browns ville
Smartsville
Loma Rica

15 Placer Auburn III
Auburn
Alta
Colfax
Forest Hill

16 Tuolumne Sonora III
Sonora
Blanchard
Groveland
Twain Harte
Keystone

17 Fresno Sanger IV
Sanger
Coalinga
Blasingame
Millerton
Hurley
Joaquin Murietta
Piedra
Squaw Valley
Sand Creek

18 Kings Oasis
Cottonwood Pass
Hanford IV

19 Madera-Merced Madera IV
Madera
Ahwahnee
Coarsegold
Gustine
Los Banos
Ranchoria
Raymond

20 Mariposa Mariposa IV
Mariposa
Coulterville
Usona
White Rock
Cathey
Hornitos

21 Owens Valley (Inyo-Mono) Bishop IV
No Forest Fire Stations - Administrator only is assigned to this unit.

22 Tulare Visalia IV
Visalia
Fountain Springs
Hammond
Porterville
Tyler Creek
Woodlake
Badger
Milo

23 Monterey King City V
King City
Bradley
Carmel
Gonzales
Lockwood
Parkfield
Tularcitos
Mustang

24 San Benito Hollister V
Hollister
Antelope
Bear Valley
Beaver Dam

25 San Luis Obispo San Luis Obispo V
San Luis Obispo
Cayucos
La Panza
Las Tablas
Nipomo
Paso Robles
Cambria
Santa Margarita
Shandon

26 Santa Clara Morgan Hill V
Morgan Hill
Saratoga Summit
Sumol
Alma
Almaden
Castle Rock
Del Puerto
Pacheco
San Antone
Smith Creek
Stephens Creek
Coyote

27 Santa Cruz Felton V
Felton
Davenport
Corralitos
Sandy Point
Burrell
Soquel

28 San Mateo Redwood City V
Belmont
Pescadero
Sky Londa

29 Orange Orange VI
Orange
Yorba Linda
El Toro
San Juan - Capistrano
Trabuco
Irvine Lake

30 Riverside Perris VI
Perris
Beaumont
Corona
Elsinore
San Jacinto
Temecula
Anza
West Riverside
Sage

31 San Bernardino San Bernardino VI
San Bernardino
Etiwanda
Yucaipa
Devore
Hesperia
Loma Linda
Phelan
San Antonio
Yucca Valley
Lucerne

32 San Diego Monte Vista VI
Monte Vista
Campo
Julian
Valley Center
Cuyamaca
Potrero
Ramona
Red Mountain
San Marcos
Warner Springs
DeLuz
Dulzura
Flynn Springs
White Star
Lyons Valley
Miller
Miramar
Rincon
Witch Creek

CONSERVATION CAMPS: COUNTY AND DISTRICT

1 Alder Del Norte I
2 Chamberlain Creek Mendocino I
3 High Rock Humboldt I
4 Konocti Lake I
5 Black Mountain Sonoma I
6 Parlin Fork Mendocino I
7 Mobile District-Wide I
8 Magalia Butte II
9 Crystal Creek Shasta II
10 Plum Creek Tehama II
11 Intermountain Lassen II
12 Deadwood Siskiyou II
13 Antelope Lassen II
14 Mobile District-Wide II
15 Iron Mine Placer III
16 Pine Grove Amador III
17 Vallecito Calaveras III
18 Beaver Creek Calaveras III
19 Folsom Lake Sacramento III
20 Smartsville Yuba III
21 Washington Ridge Nevada III
22 Mt. Bullion Mariposa IV
23 Miramonte Fresno IV
24 Mt. Home Tulare IV
25 Coarsegold Madera IV
26 Blasingame Fresno IV
27 Marietta Fresno IV
28 Mono-Inyo Inyo IV
29 Mobile District-Wide IV
30 Black Canyon Monterey V
31 Ben Lomond Santa Cruz V
32 Cuesta San Luis Obispo V
33 Minnewawa San Diego VI
34 Morena San Diego VI
35 Pilot Rock San Bernardino VI
36 Puerta la Cruz San Diego VI
37 Rainbow San Diego VI
38 Don Lugo San Bernardino VI
39 Prado San Bernardino VI

DIVISION OF FORESTRY NURSERIES: COUNTY AND DISTRICT

1 Davis Yolo I
2 Parlin Fork Mendocino I
3 Magalia Butte II
4 Ben Lomond Santa Cruz V

YOUTH CONSERVATION AND TRAINING CAMP: SAN BERNARDINO VI

TRAINING CENTERS: COUNTY AND DISTRICT
(Does not include facilities where instructors only are contracted for inmate training.)
1. Central Sierra Amador III
2. Southern California San Diego VI

STATE FORESTS: COUNTY AND DISTRICT

1 Jackson Mendocino I
2 Boggs Mtn. Lake I
3 Las Pasadas Napa I
4 Latour Shasta II
5 Ellen Pickett Trinity II
6 Mt. Zion Amador III
7 Mt. Home Tulare IV
8 Loghry Santa Clara V

March 1964

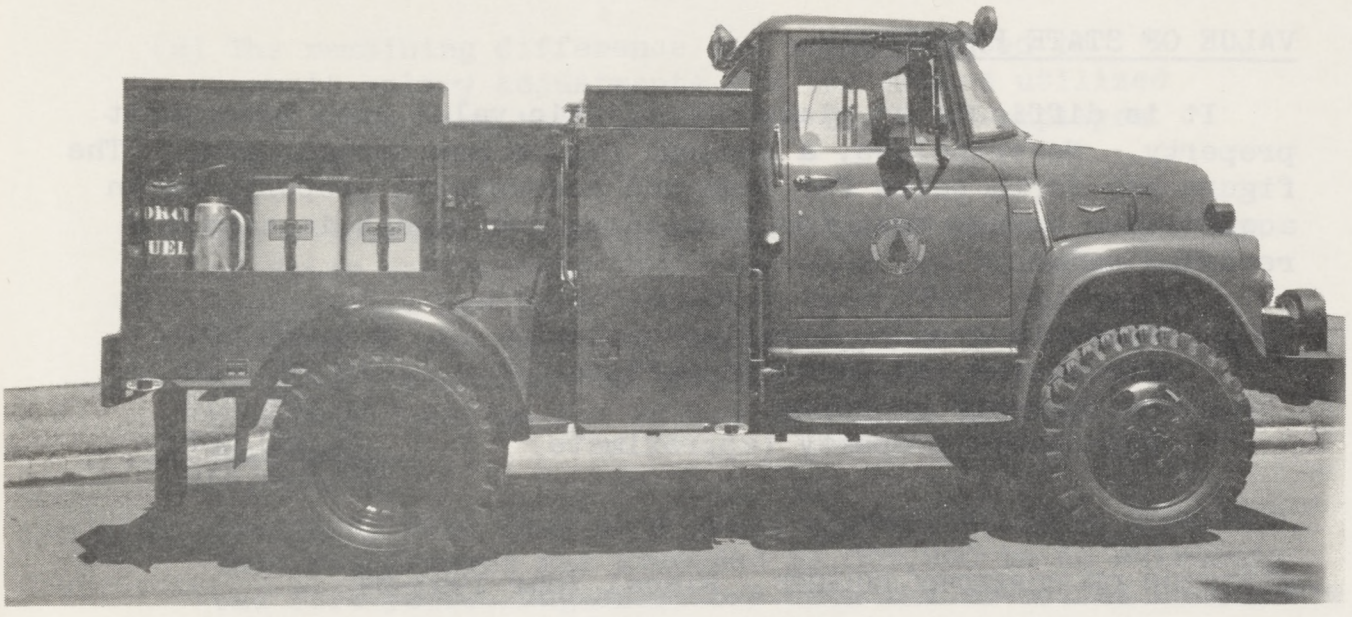
EQUIPMENT AND FACILITIES

Wheeled vehicles owned and operated by the Division totaled 2039 units. Under the transportation category were 156 sedans, 99 station wagon types, 220 pickups, 176 pickups, 176 stakesides, 59 jeeps, 96 buses. There were 168 4 W.D. pumper trucks and 254 conventional pumpers plus 49 pickup pumpers. There were 97 bulldozers served by 75 transports and 63 special service trucks. Living quarters were provided by 13 house trailers plus those in 3 Mobile Camp units each of which consists of a complement of 16 trailers. There were 52 cement mixers, 47 dump trucks, 35 road maintainers, plus 333 miscellaneous tanks, trailers, disc plows and so forth.

Radio facilities were not augmented during the year. However a legislative blessing for expansion of a statewide microwave system was happily received. Total radio units operated by the Division include 2750 mobiles, base stations and portable equipment.

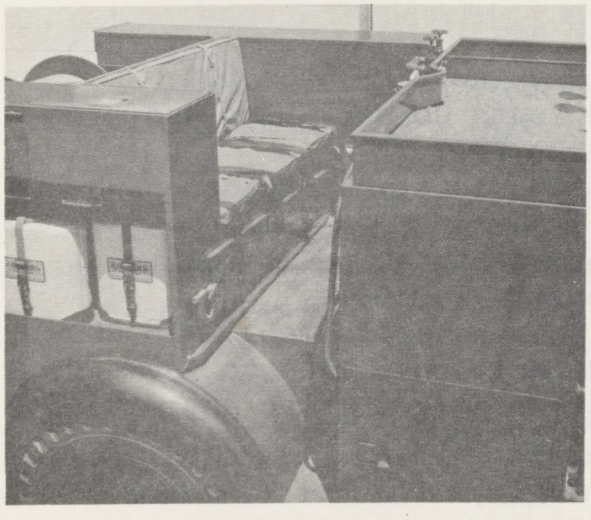
An inventory of telephone lines in the Division system shows 865 miles of grounded line and 2440 metallic. The greatest mileage is in the Central Coast District. The Division must also maintain its 16 miles of power line. Such lines are generally legs off public utility lines to service isolated stations. Roads maintained by the Division either on State property or formal right of way totaled 3580 miles. Sixty-three bridges of all types having a lineal distance of 3720 feet are on the Division records.

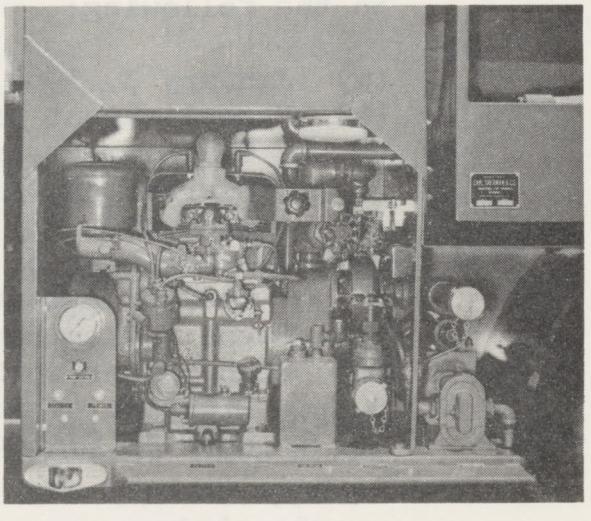
A FLEET OF NEWLY CONSTRUCTED MODEL NO. 1 DIVISION FIRETRUCKS. THIS TYPE FIRETRUCK WAS FIRST USED ABOUT 1952. COMMONLY CALLED THE "CONVENTIONAL, 6 MAN, HEAVY," ITS BASIC SPECIFICATIONS ARE: 19,500 LB. GVW; 157 INCH WHEEL BASE; 327 CU. IN. ENGINE; AUTOMATIC 6 SPEED TRANSMISSION WITH TORQUE CONVERTER; 500 GAL. WATER TANK; MIDSHIP 500 GPM PUMP; AUX. ENGINE 85 GPM PUMP; 2 POWER REWIND REELS; SINGLE JACKET HOSE, 800 FT. ONE INCH, 1200 FT. 1½ INCH. CURRENTLY 120 OF THESE VALUABLE GENERAL PURPOSE FIRE CONTROL VEHICLES ARE IN STATE SERVICE.



Division Firetruck Model No. 4 is commonly called the Four Wheel Drive Crewtruck. This rough country land vehicle for attacking forest and range fires represents about 40 years of experience applied to currently advancing industrial capabilities. On a 127 inch wheel base chassis for maneuverability this unit weighs 14,000 lbs., carries two men in the cab and three in rear and 280 gallons of water. There are 168 of these trucks in Division service.

Cutting tools are in left side compartment opposite backpack pumps. The auxiliary engine for the centrifugal 85 gpm pump is mounted midship on the left side (see photo below). Note rear seats for crewmen in bottom picture (left).





VALUE OF STATE PROPERTIES.

It is difficult to place a realistic value upon government property. Nevertheless, a general figure has certain uses. The figure set forth below for land and accountable property is an acquisition value; that for structures and plants is simply a recorded value.

State Land under Division control	$ 3,269,000
Structures and plant facilities	19,740,000
Accountable property	16,025,419
Expendable property (approximate)	8,000,000
	$47,034,419

DIVISION OF FORESTRY BUDGET - Fiscal Year 1963-64

(1)	GENERAL SUPPORT	$24,001,584
(2)	FOR OTHER AGENCIES protecting State and private State responsibility land	2,823,941
(3)	EMERGENCY FIRE FUND	320,000
(4)	BLISTER RUST CONTROL	75,000
(5)	INSECT CONTROL	20,000
(6)	FOREST AND FIRE RESEARCH	312,585
(7)	TOTAL ABOVE	$27,553,110
(8)	CAPITAL OUTLAY	5,986,384

Explanation of above budget:

(1) The Support Budget for the Division of Forestry was increased approximately $1,700,000 over the 1962-63 fiscal year level. The increases are attributable to the following:

(a) January 1, 1964, salary increase $486,000.
(b) Establishment of the Youth Conservation and Training Program $291,000.
(c) Conservation Camp activations and expansions $280,000.
(d) The addition of twenty seasonal positions to the Air Attack Program, $59,000.
(e) Owens Valley Ranger Unit establishment, $18,000.
(f) Eight other workload positions added to the Division of Forestry's budget at an estimated cost of $70,000.

(g) The remaining difference can be attributed to merit salary adjustments and the method utilized in reflecting the cost to the State of employee benefits.

(2) The allotment of funds to other agencies for protection of State and private land for which the Division is responsible has been increased $266,788. The major portion of the increase represents a relative adjustment to give recognition to the U.S. Forest Service and Contract Counties for salary increases granted to State employees.

(3) Emergency Fire Fund is a basic appropriation of $320,000. This requirement has exceeded $2,000,000 in an extremely bad fire year. Augmentations from the so-called Governor's Emergency Fund are requested when the need arises. (Anticipated 1963-64 expenditure: $500,000 plus).

(4) Paid to U. S. Forest Service in matching expenditures for field projects.

(5) To be expended in cooperative control projects in areas of serious infestation.

(6) Includes forest and fire research $173,002; soil-vegetation mapping $116,111; watershed research at San Dimas Experimental Forest $23,472.

(7) The total set forth represents the net expenditure of the Division. Gross expenditures total approximately $33,500,000 of which the State recovers in the form of reimbursements the following:

(a) Rural-structural fire protection (contracts with counties and fire districts. See page 17).	$4,500,000
(b) From U.S.D.I. for protection of 3.6 million acres of scattered public domain lands	408,000
(c) Other reimbursements-collection for services to employees, rental to other agencies, services to other agencies, etc.	1,450,000

(8) Funds available for State Building Program includes $3,270,000 ear-marked for Conservation Camp sites, construction and equipment. This type of appropriation is available for three fiscal year periods after appropriation.

CONSERVATION CAMPS

Work camps of selected prison inmates and youthful wards in cooperation with the Division of Forestry have been in successful operation since 1945. Four new adult camps were opened in 1963. Two of these were rather unusual in that they might be described as camps within institutions.

Antelope is the name given a 100-man work force working out of the California Conservation Center near Susanville in Lassen County. Prado is a similar 100-man force out of the Southern Conservation Center near Chino in Riverside County. Division of Forestry personnel supervise these crews on various work projects within acceptable travel distance of the base institution.

Inyo-Mono Camp was established in August a few miles northwest of Bishop. This is a standard unit to accomodate 80 inmate workers. Seven miles west of Lower Lake in Lake County the Konocti Camp was established in the late fall.

At the end of the year the Division was the supervising cooperator in Conservation Camps which housed a total of 2280 adult inmates and 345 wards. The camp units consisted of 24 standard adult camps, 3 mobile adult camps and 3 work crew units based at institutions. There were 4 regular camps of Youth Authority wards with 3 permanent sub-camps commonly called spike camps.

Conservation Camp crews devoted 226,324 man-hours to the suppression of forest fires out of a grand total of 5,820,500 man-hours work during 1963. Public conservation projects included in the non competitive work program involve fire hazard reduction, search and rescue of lost or injured persons, truck trail construction, forest tree seed gathering and nursery operation, game and fish habitat improvement, the clearing of sites for public camp ground and recreational activities and other similar projects.

At year's end three new Conservation Camps were in some state of development.

FIRE PREVENTION AND LAW ENFORCEMENT

Both the Legislature and responsible administrative officials of this agency have placed special emphasis upon a program of preventing and reducing the incidence of fire. This program attacks the problem with four weapons: education of all types of persons and parties who may cause fires to start, enforcement of laws related to fire, physical elimination and reduction of fire hazards, study and analysis of fire risk and hazard.

A great deal of this program, especially in the educational field, is carried out in cooperation with other agencies of government, educational institutions and civic groups. The California Fire Prevention Committee, with a widespread representation of more than 400 members is a major coordinating association of minds and energy to accomplish the primary goal. Somewhat more independently, Division personnel make literally tens of thousands and probably millions of contacts with the general public and users of the wildland areas in respect to fire prevention. Such media as television, movies, fairs, exhibits, signs, and so forth, are now common vehicles carrying the story of unnecessary and unwanted fire loss.

Preliminary surveys of field conditions show that 233 critical areas exist in the forest and watershed area protected by the Division where life and property are especially endangered by fire. It is believed that this revelation was regarded most seriously by the Legislature and was instrumental in bringing about some of the very firm statutes of 1963.

Division personnel spent some 47,000 man-hours investigating fire causes during the year. This resulted in 285 criminal cases of which 10 were classed as felony cases. Two persons were sent to State prison and five to mental institutions, 733 days of jail sentence were served and over 13 thousand dollars in fines levied. Over 6000 dollars of reparations were paid. Among civil cases, 665 were submitted out of 3190 investigated for liability. Over $48,000 was collected from past offenders. Law enforcement work has and undoubtedly will increase significantly. Yet 19 percent of the Divisions man-caused fires of the year were incendiary. This is unfortunately in keeping with an upward trend. Tendencies toward malicious mischief among juveniles and young adults seems much too evident to the investigating officers.

RANGES AND WATERSHEDS

If the average citizen is somewhat confused about why so much money is spent to prevent fires from destroying brushy mountain vegetation in one place while in other places its destruction seems to be tolerated or encouraged, the confusion is understandable. Briefly stated, a similar type of vegetation in different places can have different applied values. In fact, any one area of vegetation may have a decided difference in value as judged by persons with different personal interests.

The sheepman who hopes to establish a high quality of browse on his range land should not really be expected to have a primary concern for the preservation of a well modulated flow of water from those lands for the benefit of a city a dozen miles away. Furthermore, it could well be that another segment of the public would like to see the same land burned in order to improve the game habitat, while the water-using citizens would vigorously protest such an action.

In other words, there is what might be called a primary and controlling interest by the party in possession of the land, and there may be one or more groups of people on the outside with other desires regarding use of the same land.

If the owner's ideas of use are seriously damaging (or potentially damaging) to a large enough segment of the general public, then government agents (as directed by the public laws) place regulations upon the use of the land or take other actions deemed necessary, such as the abatement of a wildfire nuisance. The problems of land management, either public or private land, are just beginning at this point. To the personal, social and economic factors must be added extremely complex natural problems in the fields of geology, meteorology, and biology.

The State and its agents must respect the privileges of land owners as well as the public welfare. Where fire can legitimately be used as a land clearing and site improvement tool or method, the Division of Forestry is concerned primarily in seeing that the possibility of an escape of uncontrolled fire is reduced to reasonable proportions.

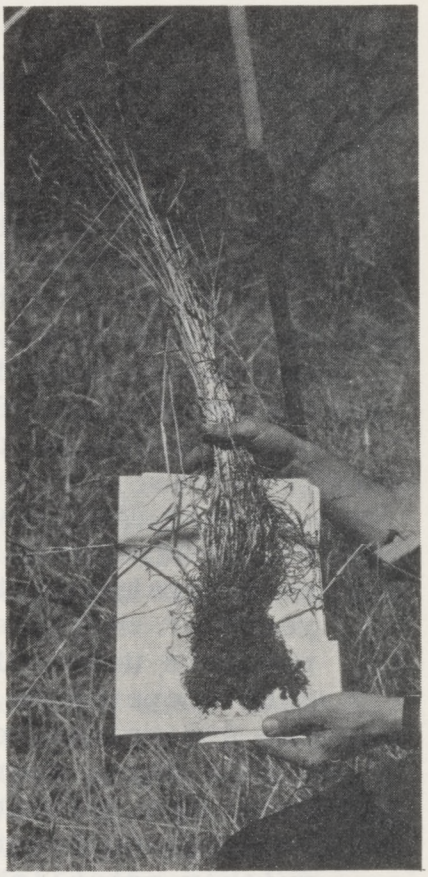
Ranchers and sportsmen used fire in the management of 68,275 acres of brush range land in California during 1963. Assistance in the form of individual contacts, group demonstrations, and publications was provided by specialists among the Division's range and fire control personnel. Permits with recommendations regarding the use

of fire were issued to 300 individuals. These individuals conducted 224 controlled burns of which 34 were cooperative projects involving two or more ranchers. Special fire crews or regular Division fire control forces stood by in the event of the fire's escape during the burning of 52,267 acres.

Activity in this program was somewhat less than in previous years due to late spring rains and cool summer temperatures. Since 1945 over two million areas of undesirable vegetation have been treated with fire in California.

Division specialists advise landowners of other treatment - mechanical preparation, seeding, and herbicides - used in combination with fire. In 1963 nearly 10,000 acres of brush were treated with mechanical equipment prior to burning. Over 14,000 acres were seeded with desirable plants. Although most of the burns are conducted to improve grazing for livestock, 22 were conducted exclusively for game habitat improvement.

Range improvement study projects are conducted for demonstration and research. Generally these projects are undertaken cooperatively with agricultural specialists and owners of the land.



ANNUAL RYEGRASS PLANTED TO HOLD SOIL ON A BURN IN SHASTA COUNTY. NOTE QUANTITY OF SOIL RETAINED ABOUT THE ROOTS.

Sometimes when a watershed vegetation has been destroyed by fire and the resultant situation poses an imminent threat of flood and serious erosion, the State aids in the quick revegetation of the area on behalf of the general public welfare. In respect to such Emergency Revegetation of denuded watersheds, the Division acted cooperatively with the Riverside County Flood Control District in 1963 to sow annual ryegrass seed on 1,632 acres of severely burned watershed above urban developments. The shared cost of seeding by contract helicopter was $1.91 per acre. Division personnel supervised the entire project. Since the first such cooperative project in 1956, there have been 138,300 acres of critical watershed treated in this manner to secure the exposed soil against erosion under winter rains. Evaluation of the results of early seeding techniques and investigation of desirable seed species continue as important research projects for Division specialists.

The development, use, and conservation of water in California has been an important matter since the first white settlers came. With the passage of time it has naturally become increasingly important and no less complex.

Much of the planning and work of small watershed development involves many agencies and parties. The Division of Forestry enters the early phases of some of the plans by virtue of its regular statutory responsibilities in respect to forest and watershed protection and use. Liaison and active participation by the Division in some 268 watershed projects is currently in some stage or action. Cooperators involved in these projects may be any combination of private parties, irrigation districts and water companies, the Army Corps of Engineers, Bureau of Reclamation, U. S. Department of Agriculture or other California departments and divisions of government.

During 1963 Division personnel were actively engaged in 18 projects carried on under provision of U.S. Public Law 566. It is estimated that these particular projects required three man-years of employee time. An equal effort was expended on similar projects under different legal authorizations. The necessity of such cooperative effort is entirely logical and justifiable. Yet the dimensions to which a program of this nature can grow within a half dozen years is startling, to say the least. On the other hand, the estimated annual expenditure of more than 351 million dollars represented in the construction aspects of these projects quickly establishes this Division as a sincere but small cooperator in an immense program.

PRIVATE FORESTRY; EDUCATION AND REGULATION

Ten professional foresters are available on request to help landowners solve their land and forest management problems. These Division service foresters are located in Fortuna, Willits, Santa Rosa, Redding, Oroville, Sacramento, Camino, Monterey, Fresno and Riverside. They are expert in tree planting, stand improvement, marketing timber and other forest and land related matters. Many owners of smaller tracts of timberland do not have the knowledge or ability to get the most out of their land. In total these owners own nearly 2 million acres of forest land that is vitally important to the State's economy and especially the economy of the forested counties. If this land is not kept productive and growing tree crops for the future, prospects for a wood-based economy in many parts of the State are dim.

In 1963 the service foresters received 2,266 requests for assistance. Nearly 2,000 owners of over 350,000 acres of timberland were given forest management advice or assistance of some kind. The foresters advised on the harvest of 9,540 acres of timber; helped with timber

stand improvement on 5,825 acres including 1500 acres of pruning; and assisted in the planting or seeding of 7,550 acres of land. Over 11,000 acres of young timber were saved from premature harvest that would have damaged growth potential. Some of this area represented proposed conversions of timberland to grazing. Such use would not have been economically feasible.

The owners assisted received over a million and a half dollars from the sale of forest products in which the service foresters advised in harvest methods, helped in marking the trees to be cut, or helped in marketing timber or Christmas trees. Eighty-one owners were advised to seek the help of consulting of industrial foresters because of the size or complexity of the owner's forestry problem or because of the limitations on time that a service forester can afford to spend with anyone owner due to the large workload of requests the foresters must handle.

Service Forestry is a nationwide cooperative program with the U.S. Department of Agriculture. The Forest Service, under the Cooperative Forest Management Act of 1950, reimburses about 35% of the cost of the program in California. Advice and assistance to owners participating in the Agricultural Conservation Program of cost-sharing for certain forestry practices is also partially reimbursed by the Federal government.

* * * * *

Division personnel are responsible for inspection and the initiation of disciplinary measures to enforce the law which regulates the commercial harvesting of timber. Under the provisions of the Forest Practice Act (see page 10) 533 timber operator permits were issued and 125 terminated in 1963. This accounted for 2341 valid permits although only 1,632 represented active operations. Operators reported cutting 5.54 billion board feet of timber in 1962, which was 3.5 percent higher than the previous year.

Division employees made 2,241 inspections and found that 86 percent of all rules were respected. Most of the infractions involved snag disposal, fire plans, erosion control and firebreaks. More than half of the infractions were brought into compliance before the second inspection. The Division sent 1,079 violation notices to operators and filed eight litigation cases. Formal hearings resulted in the revocation of three permits and the suspension of two others. This action seemed to inspire considerable corrective work on the areas involved and elsewhere.

Nineteen alternate and one amended plan of harvesting were approved by the Board of Forestry as provided by law. Sixteen of the modifications related to clear-cutting on the north coast where prompt seeding or planting is to follow logging.

Unless land is to be devoted to the growing of timber there is no point in planning for continued yield and the subsequent regulation of methods of harvesting. However, the owner must file an affidavit of intent to devote the land to other purposes than the production of forest products. Ninety-five such declarations were filed in 1963, with conversion to grazing being the stated objective in 86 percent of the cases. In order to obtain factual information as to what has happened to the 2,454 such land parcels totaling 762,000 acres between the years 1946 and 1961, a field survey was initiated late in 1963.

NURSERIES AND REFORESTATION

The rule that light cone crops follow heavy ones was borne out in 1963. The cone crop in 1962 had been a bumper one, but the crop of 1963 was a near failure. Only 29 tons of cones were collected that fall. These yielded a mere 1,817 pounds of seed, slightly more than 10 percent of the 1962 yield.

Distribution of seedlings from the Division's four nurseries increased slightly to 3,346,000. It is suspected that poor planting conditions caused by drought in southern Sierra and Southern California forests had some effect on the demand. California's reforestation efforts on private land remained at a point slightly higher than midway among the States. Planted seedlings and direct seedling reforested 7,113 acres in 1963.

A number of reforestation studies were conducted cooperatively on private land and on three State Forests. In planting Douglas-fir on relatively hot, dry sites it was found that when seedlings were protected on one side with shingles this greatly improved survival. Survival of unshaded seedlings was less than one-third that of shaded.

The warm day climate of the Sierra has been an obstacle to successful reforestation by seeding. Studies using a tractor drawn machine-seeder developed in Division shops indicate this obstacle may be overcome soon. Evidence seems to indicate that reforestation by seeding can be successfully accomplished in the north coast region.

The production of hybrid pine seed is influenced by many of the same factors that affect natural cone production in pine species. Because the 1963 natural cone crop was poor the production of hybrid seeds was poor also. However, the yield of seed from hand pollinated pine flowers was relatively better than from natural pollination.

LEFT PICTURE -
SEEDING DOUGLAS-FIR BY AIR ON A CLEAR-CUT LUMBERING OPERATION ON GOOSE CREEK, DEL NORTE COUNTY. THIS REFORESTATION METHOD IS AN APPROVED DEPARTURE FROM LOCAL FOREST PRACTICE RULES.

RIGHT:
MEMBERS OF THE STATE FORESTER'S 10-MAN ADVISORY COMMITTEE ON REFORESTATION METHODS AND PROCEDURES AT MOUNTAIN HOME STATE FOREST. THIS COMMITTEE OF CITIZENS WAS APPOINTED IN RESPONSE TO A STATUTE WHICH RECOMMENDS STUDIES OF REFORESTATION METHODS AND NEEDS. THE COMMITTEE IS OBSERVING TRANSPLANT BEDS WHERE SEEDLING CONIFER 1-0 STOCK IS HELD FOR A YEAR PRIOR TO FIELD PLANTING.

State Forests

The Division manages eight State Forests totaling 70,238 acres. The forests are used for demonstration and experimentation in forestry, timber growing, and the multiple use aspects of wild land management including recreation. The four largest Forests contain 69,000 acres and three of these are staffed by full-time professional foresters.

Ever since the Forests were acquired, timber management programs have required the harvesting of timber products. In 1963 over 22 million board feet of timber, three thousand Christmas trees, and other products were cut from the Forests. These products were valued at $456,355. Since 1946 over

CONTRACT LOGGING OF SALVAGE WHITE FIR IN MOUNTAIN HOME STATE FOREST. THE DIVISION ENDORSES THIS METHOD OF MOVING SAWLOGS BY MULES IN A FOREST WHERE PRESERVATION OF RECREATION VALUES HAS BEEN GIVEN HIGH PRIORITY, AND ESPECIALLY THE PRESERVATION OF SIERRA REDWOOD.

six and a quarter million dollars has been returned to the State Treasury from State Forest product sales. By law the forests pay in-lieu property taxes to the counties in which they are located. These payments now amount to nearly $400,000.

On the Jackson State Forest, in Mendocino County the last old-growth timber stands were cut in 1963. Timber cutting on this Forest will now come from young-growth stands and residual old-growth trees that previously were left to insure a new crop of timber. As the logged over areas restock with new trees this residual stand can be cut.

Caspar Creek is the present site of most of the young-growth logging operations. Several experimental cuttings and demonstrations have been conducted in this watershed. Included among them is a cooperative watershed study to learn the effects of timber management on stream flow, water production and erosion. The experimental area is now being calibrated. Two measuring weirs, fish ladders and fish counting stations have been built in the stream. A new experimental logging area was prepared for cutting in 1964. This area will be artificially seeded and planted to try to achieve better control of restocking of the stand following cutting. Several trials of different methods of measuring and selling timber are also scheduled. Included is a test of selling timber by weight, a method now finding favor in other parts of the country.

Deer exclosures in previous experimental areas in Caspar Creek now show the tremendous effect that deer have on the vegetation of cutover areas. In some exclosures Ceanothus bushes are five to six feet high within the fenced area but only inches high in the surrounding area where deer browse.

Computation of a "continuous forest inventory" for Jackson Forest was completed. This inventory will enable the foresters to measure the constantly changing growth and condition of the Forest. Much of the computation was accomplished through new computer and machine card processing techniques.

The Latour State Forest in Shasta County east of Redding was hard hit by the Columbus Day storm of 1962. Over one million board feet of blowdown timber was salvaged by timber sales in 1963. This not only recovered much of the value of the down trees but also materially decreased the possibility of an insect epidemic. Many Christmas Trees have been sold from this State Forest. But heavy snow reduced that operation to a sale of only 1,439 trees in 1963. Experimentation with planting and reclaiming brush fields continued on this Forest along with a study of range grass adaptability.

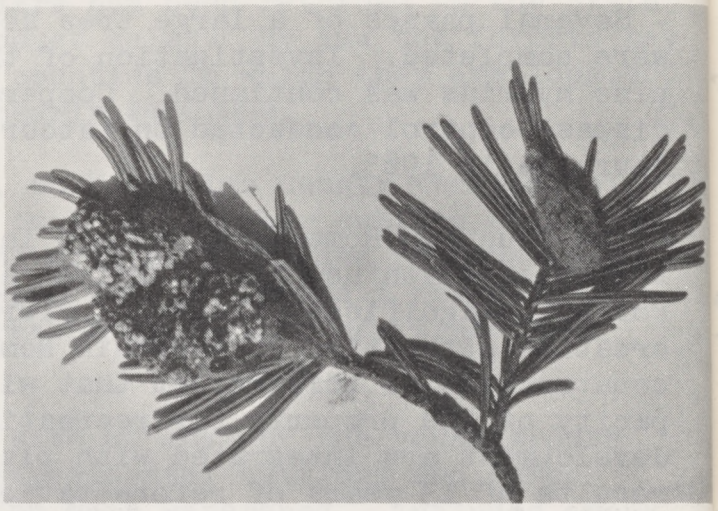
Several phases of a large tree seeding and planting experiment were completed. Investigation of the success of Jeffrey-Coulter pine hybrids was continued. Cooperative experiments in mistletoe disease control conducted on Latour were reported in professional journals in 1963.

The Mountain Home State Forest in Tulare County is unique in that recreation use is recognized as the dominant use of the Forest. Magnificent stands of Sierra Redwood are the prime recreation attraction at Mountain Home. A new campground is under construction at this Forest that will greatly increase the capacity of the property for recreation use. Timber sales and road development are integrated with planned recreation potential. The results of 13 years of reforestation studies on this Forest were published as a State Forest Note in 1963. This work provides some important conclusions regarding seeding and planting and gives a good foundation on which to plan further reforestation experiments. A large amount of salvage and cleanup work was accomplished at Mountain Home in 1963. (see photo page 37). A "choose and cut" type Christmas Tree management area was established. A good start on a fuel break for fire protection completely ringing the forest was made. A history of the Mountain Home area - The Men of Mammoth Forest was privately published by the forest manager (see page 3).

PEST CONTROL

There is an informal association of the several industrial, governmental and educational institutions and agencies interested in reducing damage to commercial forests caused by plant and animal pests. Its somewhat unwieldy title is California Forest Pest Control Action Council. Through this group a concentration of knowledge and recommended action is maintained. It has also sponsored a statewide reporting system in order to alert the proper authorities in regard to potential epidemics. Last season the Division of Forestry contributed 135 reports of potentially serious infestation or infection. Volume losses from forest pests are estimated to amount to 1.3 billion board feet annually. However, 1963 losses exceeded two billion feet. And this does not include any estimate of the obscure but very real loss in forest tree growth.

The Council took up the controversial pesticide issue and recommended the use of pesticides where other methods would not economically accomplish the control objective. It recommended accelerated research in pesticides along with silvicultural, biologic and genetic approaches in order to abate forest pest losses. It urged that competent scientists be consulted in any attempt to legislate regulations involving use of pesticides. The Council



DOUGLAS-FIR TUSSOCK MOTH. NOTE EGG MASS AT LEFT WHICH SPAWNED LARVAE WHICH THEN PROCEEDED TO DEFOLIATE THE TREE. SOME OF THESE LARVAE PROBABLY CONSTRUCTED THE COCOON ON THE RIGHT TWIG. ADULTS WILL EMERGE FROM COCOON TO LAY MORE EGGS AND CONTINUE THE CYCLE OF LIFE AND TREE DESTRUCTION.

hoped for an increase in research of the control of root diseases. It was noted that depredations of pine beetles continues strong in Southern California. However, there was some reduction in such timber damage throughout the Mother Lode area of the Sierra, undoubtedly because of logging of mature timber, direct insect abatement work, and favorable weather.

Fir engraver beetles continued to cause considerable damage statewide. Of the animal pests, porcupines are reported most often, but deer are causing greatest economic loss.

The great blow-down of October 1962 did not cause the potential and anticipated epidemic insect infestations principally because of concentrated salvage work which eliminated breeding grounds. However, defoliator insects increased. White fir sawfly and Douglas-fir tussock moth increased in the central Sierra and northeast part of the State.

The Division took part in 13 direct forest insect control projects, generally meeting about half the cost. Conservation Camp crews played a valuable role in this program where 13,631 trees were treated. Blister Rust control by abatement of ribes host plants continued north of Merced River. Some 42,000 acres were embraced by control projects. Dwarfmistletoe control is still the objective on continuing cooperative projects on Boggs, Latour and Mountain Home State Forests.

TIMBER TAXATION

In accordance with an opinion rendered by the Attorney-General in 1962, the Board of Forestry in January 1963 adopted an amendment of its policy setting forth guidelines for determining maturity of young growth timber under Section 12 3/4, Article XIII of the State Constitution. During 1963 young growth timber on 11,634 acres of 60 properties within Humboldt, Mendocino, and San Mateo Counties were declared mature for assessment purposes. Since the first maturity declarations in 1955, the maturity of young growth timber on 724 properties, consisting of 296,217 acres, has been declared in six counties.

RESEARCH AND DEVELOPMENT

Wildland research planning received increased emphasis in 1963. The Board of Forestry established a Wildland Research Planning Committee early in the year to replace the former Advisory Committee on Forest Research. The members of the new committee consist of the Chairman and one member of the Board of Forestry, the Director of Conservation, the Dean of the University of California School of Forestry, the Director of its Forest Products Laboratory, the Regional Forester of the U. S. Forest Service, the Director of the Pacific Southwest Forest and Range Experiment Station, the Secretary-Manager of the California Forest Protective Association, the Chairman of the Los Angeles Watershed Committee, and the State Forester. The purpose of this committee is to evaluate needs in wildland investigations, and to promote, plan, and coordinate research efforts.

Operations within the Division in 1963 continued at the same level of research as in the previous year. Funds appropriated for this purpose in July were $196,474, plus money to continue the Soil-Vegetation Survey. Nine projects were contracted to the University. This enabled the continuance of work in fire protection economics, seed tree effectiveness, physiology of planting stock, rodent control, forest growth prediction, dwarfmistletoe, bark beetles, California hardwoods, and "x" disease in Southern California pines.

An additional five projects were contracted to the PSF&R Experiment Station to pursue studies in brush watershed management at San Dimas, fire prevention, fire climate, fire retardants, and hazard reduction in Southern California watersheds.

The survey of commercial forest lands and industries in the State initiated by University in 1962 with financing from the State Office of Planning was completed in late 1963. The forester from the Division loaned to this project for a year is one of the authors of a rather comprehensive report. The findings will be used by the State Office of Planning in the formulation of a Development Plan for California.

In respect to the fire climate study, a project of two seasons involving sea breezes along the central and south coast was terminated and preliminary reports released. However, a similar new project started in the San Juan Capistrano area, plus a concentrated research attack on the desert winds known as the Santana.

The old theory that a cool sea breeze would improve a hot fire situation some miles inland does not always hold true. Such air movements, especially near the ground, are often dangerous because the air may become warmer and dryer than anticipated due to solar radiation over the earth, and because the assumed sea breeze may in fact be a mass of land air in front of the sea wind.

In the fire weather forecasting program along with an increased tempo of research into past statistics conducted by the Riverside Forest Fire Laboratory, there was a new fire weather forcasting station established at Eureka and a weather radar plan set up on Catalina Island.

The Soil Vegetation Survey of California wildland began in 1947 and has continued steadily as a cooperative venture. Currently a total of 9.2 million acres have been mapped. Much has been learned about new soil series and the relationship of soil to the natural vegetation it supports. Certainly it can be claimed that nowhere else in the world has so much reliable scientific knowledge been gathered about so large an area of wildland soil and vegetation. Such knowledge will obviously continue to be of great economic value as basic land management tool. In 1963, in Shasta and Sonoma counties there were 333,000 acres of field mapped as the most recent contribution to the project.

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Resources Agency and being
directly related to forestry affairs

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"Resources Agency Committee on Recreation Planning" by De Witt Nelson. Sacto. Jan. 9; 5 pp. proc.

"The Challenge of Regional Planning" by De Witt Nelson. U. of C., Davis, March 15; 22 pp. proc.

"Outdoor Recreation in California - An Overview" by De Witt Nelson. Wool Growers Assn., S. F. Aug. 8; 12 pp. proc.

"Problems and Opportunities in Resource Management" by De Witt Nelson. S. F. Nov. 15; 4 pp. proc.

"Recreation is on Our Doorstep" by De Witt Nelson. Cattlemen's Assn. Bakersfield, Dec. 6; 16 pp. proc.

"Pests and Pesticides in California" by De Witt Nelson. Gov's. Committee, S. F. Dec. 10; 14 pp. proc.

"A Program of Outdoor Recreation for State Forests of California" (symposium before Board of Forestry, Fort Bragg, Aug. 16) by Charles De Turk, W. C. Branch, Philip T. Farnsworth, John Callaghan, Henry Vaux, R. W. Allin, De Witt Nelson. 19 pp. proc.

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"Opening Remarks - Central Sierra Forest Fire Conference" by F. H. Raymond. 7 pp.

"Reforestation Studies - 1962" by Ronald S. Adams. 24 pp.

"Emergency Revegetation of Burned Watersheds - 1962" 11 pp.

"Activity in Range Improvement - 1962" 17 pp.

"Production of California Timber Operators in 1961" by Daniel Dotta. State Forest Note No. 14. 7 pp.

"A Study of Posts in El Dorado County" by W. P. Maguire. State Forest Note No. 15. 7 pp.

"A Monterey Pine Planting - Grazier Plantation" by J. E. Sindel. State Forest Note No. 16. 5 pp.

"Sugar Pine Planting on Jackson State Forest" by R. J. Malain, D. M. Burns, J. E. Sindel. State Forest Note No. 17. 4 pp.

"Tree Planting and Seeding on Mountain Home State Forest, 1950-1962" by Floyd L. Otter. State Forest Note No. 18. 11 pp.

"Chemical Control of Brush and Weeds on the Ranchita Range Study" by Marvin Dodge, Richard Bawcom, Cecil Pierce. Range Improvement Studies No. 10. 6 pp.

"Use of a Small Helicopter for Seeding in Rough Terrain" by Richard J. Day. Range Improvement Studies No. 11. 7 pp.

"The Importance of Site Selection in Seeding for Range Improvement" by Robert H. Blanford. Range Improvement Studies No. 12. 3 pp.

"Perennial Grasses Aid Resources Management" by Richard Day and E. N. Gladish. Range Improvement Studies No. 13. 10 pp.

"Ryegrass and Blando Brome on Burned California Watersheds" by E. N. Gladish. 7 pp.

"As the Crow Flies - A Story of Helitack Operations in Northwest California" Fire Control Experiments No. 5. 10 pp.

"Initial Attack Helicopter Report, 1963" (by Humboldt-Del Norte Ranger Unit) 11 pp.

"Characteristics of Forest Fire Retardants" 1 pp.

"Safety Rules for Fire Crews in Areas Where Air Tankers Are Operating" 2 pp.

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"Forest Pest Conditions in California - 1962" 21 pp. S.P.O.

"Streamflow Increases After Removing Woodland-Riparian Vegetation from a Southern California Watershed" by P. B. Rowe. Journal of Forestry. May 1963.

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"Effect of Organic Liquids on Collapse and Shrinkage of Wood; by E. L. Elwood and B. A. Ecklund. Forest Products Journal, July, August, September 1963.

"Root Growth and First-Year Survival of Pinus Ponderosa in Second-Growth Stands of the Sierra Nevada" by D. W. Muelder, D. O. Hall, R. G. Skolman. California Forestry and Forest Products No. 32. 7 pp. proc. U. C.

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"Cone Beetles of the Genus Conopthorus in California" by Herbert Ruckus, Jr. Pan-Pacific Entomologist. January 1963.

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"List of Timber Stand-Vegetation Cover Maps and Soil-Vegetation Maps Available for Purchase as of January, 1963." Pac SW Forest and Range Exp. Sta. Ref. 5660.

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"Costs and Values of Conflagration Barriers", Lawrence S. Davis. U of C, School of Forestry. 12 pp.

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"Demonstration and Action Projects, Fuelbreak, 1958-1962" PSWFRES. 12 pp.

"Guidelines for Fuelbreaks in Southern California" PSWFRES. 25 pp.

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